AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1 (Currently Amended): A method for monitoring diffraction while recording a hologram, comprising:

generating a source beam;

generating a data beam by projecting a first component of the source beam through a data source, the data beam having a first polarization;

generating a reference beam by adjusting a polarization of a second component of the source beam to provide a second polarization, wherein the second polarization differs from the first polarization by a small rotation.;

recording a hologram in a holographic medium from an interference between the data beam and the reference beam; and

measuring an offset component in an output arm of the data beam used for recording the hologram.

Claim 2 (Currently Amended): ~~A method as claimed in claim 1, further comprising:~~ A method for monitoring diffraction while recording a hologram, comprising:

generating a source beam;

generating a data beam by projecting a first component of the source beam through a data source, the data beam having a first polarization;

generating a reference beam by adjusting a polarization of a second component of the source beam to provide a second polarization;

recording a hologram in a holographic medium from an interference between the data beam and the reference beam;

measuring an offset component in an output arm of the data beam used for recording the hologram;

determining an output power from the offset component;

determining an input power corresponding to an input arm of the reference beam; and

determining a diffraction efficiency from the output power and the input power.

Claim 3 (Original): A method as claimed in claim 2, further comprising: monitoring the diffraction efficiency to determine a termination condition for recording the hologram.

Claim 4 (Currently Amended): ~~A method as claimed in claim 1, further comprising:~~ A method for monitoring diffraction while recording a hologram, comprising:

generating a source beam;

generating a data beam by projecting a first component of the source beam through a data source, the data beam having a first polarization;

generating a reference beam by adjusting a polarization of a second component of the source beam to provide a second polarization;

recording a hologram in a holographic medium from an interference between the data beam and the reference beam;

measuring an offset component in an output arm of the data beam used for recording the hologram

determining an output power from the offset component; and

monitoring the output power from the offset component to determine a stability condition for recording the hologram.

Claim 5 (Original): A method as claimed in claim 1, wherein the act of measuring the offset component in the output arm of the data beam includes:

splitting the offset component from the output arm of the data beam to form an offset beam; and detecting the offset beam.

Claim 6 (Original): A method as claimed in claim 1, wherein the act of generating the data beam includes: adjusting a polarization of the first component of the source beam to provide the first polarization.

Claim 7 (Currently Amended): A method as claimed in claim 1, wherein the second polarization differs from the first polarization by a ~~small~~ rotation of about one-to-five degrees.

Claim 8 (Previously Presented): An apparatus for recording a hologram, comprising:

a laser for generating a source beam;

a beam-splitter for splitting the source beam into components including a first component and a second component;

a data-beam source for generating a data beam by projecting the first component of the source beam through a data source, the data beam having a first polarization;

a reference-beam source for generating a reference beam by adjusting a polarization of a second component of the source beam to provide a second polarization;

a holographic medium for recording a hologram from an interference between the data beam and the reference beam;

a polarizing beam splitter for separating an offset component from an output arm of the data beam;

a detector for measuring the offset component; and

a lens for focusing the offset component onto the detector.

Claim 9 (Original): An apparatus as claimed in claim 8, further comprising a monitoring unit for:

determining an output power from the offset component;

determining an input power corresponding to an input arm of the reference beam; and

determining a diffraction efficiency from the output power and the input power.

Claim 10 (Original): An apparatus as claimed in claim 9, wherein the monitoring unit further includes operations for monitoring the diffraction efficiency to determine a termination condition for recording the hologram.

Claim 11 (Original): An apparatus as claimed in claim 8, further comprising a monitoring unit for:

determining an output power from the offset component; and

monitoring the output power from the offset component to determine a stability condition for recording the hologram.

Claim 12 (Previously Presented): An apparatus as claimed in claim 8, further comprising a monitoring unit for:

determining an output power from the offset component; and

monitoring the output power from the offset component to determine a termination condition for recording the hologram.

Claim 13 (Original): An apparatus as claimed in claim 8, wherein the data-beam source adjusts a polarization of the first component of the source beam to provide the first polarization.

Claim 14 (Original): An apparatus as claimed in claim 8, wherein the second polarization differs from the first polarization by a small rotation.

Claims 15-35 (Canceled)

Claim 36 (Currently Amended): ~~A method as claimed in claim 1, further comprising:~~ A method for monitoring diffraction while recording a hologram, comprising:

generating a source beam;

generating a data beam by projecting a first component of the source beam through a data source, the data beam having a first polarization;

generating a reference beam by adjusting a polarization of a second component of the source beam to provide a second polarization;

recording a hologram in a holographic medium from an interference between the data beam and the reference beam;

measuring an offset component in an output arm of the data beam used for recording the hologram;

determining an output power from the offset component; and

monitoring the output power from the offset component to determine a termination condition for recording the hologram.

Claim 37 (Currently Amended): A method for recording a hologram, comprising:

generating a source beam;

adjusting at least one of a polarization of a first component of the source beam and a polarization of a second component of the source beam, wherein after adjusting at least one of the polarizations, the polarization of the first component of the source beam differs from the polarization of the second component of the source beam by a small rotation;

generating a data beam from a data source and [[a]] the first component of the source beam;

generating a reference beam from [[a]] the second component of the source beam;

recording a hologram in a holographic medium from an interference between the data beam and the reference beam; and

measuring an offset component in an output arm of the data beam used for recording the hologram, wherein the offset component characterizes a difference between [[a]] the polarization of the first component of the source beam and [[a]] the polarization of the second component of the source beam.

Claims 38-39 (Canceled)

Claim 40 (Currently Amended): A method as claimed in claim [[38]] 37, wherein after adjusting at least one of the polarizations, the polarization of the first component of the source beam differs from the polarization of the second component of the source beam by a rotation of about one-to-five degrees.

Claim 41 (Currently Amended): ~~A method as claimed in claim 37, further comprising:~~ A method for recording a hologram, comprising:

generating a source beam;

generating a data beam from a data source and a first component of the source beam;

generating a reference beam from a second component of the source beam;

recording a hologram in a holographic medium from an interference between the data beam and the reference beam;

measuring an offset component in an output arm of the data beam used for recording the hologram, wherein the offset component characterizes a difference between a polarization of the

first component of the source beam and a polarization of the second component of the source beam; and

monitoring the measured offset component to determine a termination condition for recording the hologram.

Claim 42 (Currently Amended): ~~A method as claimed in claim 37, further comprising:~~ A method for recording a hologram, comprising:

generating a source beam;

generating a data beam from a data source and a first component of the source beam;

generating a reference beam from a second component of the source beam;

recording a hologram in a holographic medium from an interference between the data beam and the reference beam;

measuring an offset component in an output arm of the data beam used for recording the hologram, wherein the offset component characterizes a difference between a polarization of the first component of the source beam and a polarization of the second component of the source beam; and

monitoring the measured offset component to determine a stability condition for recording the hologram.

Claim 43 (Currently Amended): ~~A method as claimed in claim 37, further comprising:~~ A method for recording a hologram, comprising:

generating a source beam;

generating a data beam from a data source and a first component of the source beam;

generating a reference beam from a second component of the source beam;

recording a hologram in a holographic medium from an interference between the data beam and the reference beam;

measuring an offset component in an output arm of the data beam used for recording the hologram, wherein the offset component characterizes a difference between a polarization of the first component of the source beam and a polarization of the second component of the source beam; and

determining an output power from the offset component;

determining an input power corresponding to an input arm of the reference beam; and

determining a diffraction efficiency from the output power and the input power.

Claim 44 (Previously Presented): A method as claimed in claim 43, further comprising: monitoring the diffraction efficiency to determine a termination condition for recording the hologram.

Claim 45 (Previously Presented): A method as claimed in claim 43, further comprising: monitoring the diffraction efficiency to determine a stability condition for recording the hologram.

Claim 46 (Previously Presented): A method as claimed in claim 37, further comprising: determining an output power from the offset component.

Claim 47 (Previously Presented): A method as claimed in claim 46, further comprising: monitoring the output power to determine a termination condition for recording the hologram.

Claim 48 (Previously Presented): A method as claimed in claim 46, further comprising: monitoring the output power to determine a stability condition for recording the hologram.

Claim 49 (Previously Presented): A method as claimed in claim 37, wherein the act of measuring the offset component in the output arm of the data beam includes:

splitting the offset component from the output arm of the data beam to form an offset beam; and

detecting the offset beam.

Claim 50 (Previously Presented): An apparatus for recording a hologram, comprising:

a laser for generating a source beam;

a beam-splitter for splitting the source beam into components including a first component and a second component;

a data-beam source for generating a data beam from a data source and the first component of the source beam;

a reference-beam source for generating a reference beam from a second component of the source beam;

a holographic medium for recording a hologram from an interference between the data beam and the reference beam;

a polarizing beam splitter for separating an offset component from an output arm of the data beam, wherein the offset component characterizes a difference between a polarization of the first component of the source beam and a polarization of the second component of the source beam;

a detector for measuring the offset component; and

a lens for focusing the offset component onto the detector.

Claim 51 (Previously Presented): An apparatus as claimed in claim 50, further comprising:

a polarization-adjustment unit for adjusting at least one of the polarization of the first component of the source beam and the polarization of the second component of the source beam.

Claim 52 (Previously Presented): An apparatus as claimed in claim 51, wherein the polarization-adjustment unit operates so that the polarization of the first component of the source beam differs from the polarization of the second component of the source beam by a small rotation.

Claim 53 (Previously Presented): An apparatus as claimed in claim 51, wherein the polarization-adjustment unit operates so that the polarization of the first component of the source beam differs from the polarization of the second component of the source beam by a rotation of about one-to-five degrees.

Claim 54 (Previously Presented): An apparatus for recording a hologram, comprising:

a laser for generating a source beam;

a beam-splitter for splitting the source beam into components including a first component and a second component;

a data-beam source for generating a data beam from a data source and the first component of the source beam;

a reference-beam source for generating a reference beam from a second component of the source beam;

a holographic medium for recording a hologram from an interference between the data beam and the reference beam;

a polarizing beam splitter for separating an offset component from an output arm of the data beam, wherein the offset component characterizes a difference between a polarization of the first component of the source beam and a polarization of the second component of the source beam;

a detector for measuring the offset component; and

a monitoring unit for monitoring the measured offset component to determine a termination condition for recording the hologram.

Claim 55 (Previously Presented): An apparatus for recording a hologram, comprising:

a laser for generating a source beam;

a beam-splitter for splitting the source beam into components including a first component and a second component;

a data-beam source for generating a data beam from a data source and the first component of the source beam;

a reference-beam source for generating a reference beam from a second component of the source beam;

a holographic medium for recording a hologram from an interference between the data beam and the reference beam;

a polarizing beam splitter for separating an offset component from an output arm of the data beam, wherein the offset component characterizes a difference between a polarization of the first component of the source beam and a polarization of the second component of the source beam;

a detector for measuring the offset component; and

a monitoring unit for monitoring the measured offset component to determine a stability condition for recording the hologram.

Claim 56 (Previously Presented): An apparatus for recording a hologram, comprising:

a laser for generating a source beam;

a beam-splitter for splitting the source beam into components including a first component and a second component;

a data-beam source for generating a data beam from a data source and the first component of the source beam;

a reference-beam source for generating a reference beam from a second component of the source beam;

a holographic medium for recording a hologram from an interference between the data beam and the reference beam;

a polarizing beam splitter for separating an offset component from an output arm of the data beam, wherein the offset component characterizes a difference between a polarization of the first component of the source beam and a polarization of the second component of the source beam;

a detector for measuring the offset component; and

a diffraction-efficiency unit for: determining an output power from the offset component; determining an input power corresponding to an input arm of the reference beam; and determining a diffraction efficiency from the output power and the input power.

Claim 57 (Previously Presented): An apparatus as claimed in claim 56, further comprising: a monitoring unit for monitoring the diffraction efficiency to determine a termination condition for recording the hologram.

Claim 58 (Previously Presented): An apparatus as claimed in claim 56, further comprising: a monitoring unit for monitoring the diffraction efficiency to determine a stability condition for recording the hologram.

Claim 59 (Previously Presented): An apparatus as claimed in claim 50, further comprising: an output-power unit for determining an output power from the offset component.

Claim 60 (Previously Presented): An apparatus as claimed in claim 59, further comprising: a monitoring unit for monitoring the output power to determine a termination condition for recording the hologram.

Claim 61 (Previously Presented): An apparatus as claimed in claim 59, further comprising: a monitoring unit for monitoring the output power to determine a stability condition for recording the hologram.